



## “CLEARCOMMDATA” Single Cable Industrial Intercom Pre-start Alarm and Signalling System

### System Description

The new Austdac “CLEARCOMM” system, released by Austdac Pty Ltd provides numerous essential functions required on tunnelling and overland conveyors.

The system utilises the new technology voice communications system that provides essential features such as:

- Fully monitored pre-start warning along the conveyor;
- Full two way voice communication between stations allowing full voice communication along the length of the conveyor;
- Continual monitoring from the controller of every intercom device along the line;
- Cable fault detection and ease of fault finding on the cable;
- Selectable tones for such functions as emergency evacuation alarm.
- Single pullwire cable system (eliminating wire rope as pullwire).

The CLEARCOMM system allows for two-way voice communications and pre-start alarm on conveyor belts. The pre-start alarm provides an audible alarm that the conveyor is about to start warning personnel to keep away. The two-way communications allows staff working along the conveyor to coordinate activities and provide emergency communications along the conveyor belt. A single cable (pull wire) is used as a communication and signalling medium.

The entire string of warning intercom devices is monitored from the controller and termination unit to ensure system integrity and maximum safety. Should the cable be damaged or severed, the unique diagnostic system will inform the system controller of the problem. The two LED diagnostic display on the front of each alarm intercom unit, quickly directs maintenance staff to the location of the cable problem.

Each alarm intercom unit features a rugged, easy to use, clutter free, two-button control panel. One push button is pressed whenever the operator wishes to talk. The other button, when pressed, simply causes all alarm intercom units on the conveyor to produce a loud tone to attract the attention of nearby tunnelling crew. With this simple and clear control, tunnelling crews can stay in touch and coordinate movement of plant and materials along the entire length of the tunnel. Maintenance and operation of the conveyor will also be improved through increased communications and coordination along the length of the belt.

The control unit provides a simple relay interface to the host conveyor control PLC. The interface consists of ON/OFF inputs for initiating pre-start alarms, evacuation, and shift control tones. For each initiating input, there is a corresponding confirmation output to confirm that the alarm or tone was sounded at all intercom alarm units. The interface to the control unit may be via the CLEARCOMMDATA field bus and incorporated into the Austdac conveyor control emergency stop, remote isolation, and control system. This approach provides for one simple serial interface with the controlling PLC.

The control unit can be interfaced to Austdac standard voice synthesisers for PLC controlled voice message annunciation or to any sound card on a PC to allow custom message annunciation. The control unit can also accept input from any site based public address system.



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The CLEARCOMM system may also be interfaced to a standard telephone extension allowing party line type telephone calls to be made or accepted via the alarm intercom units. Keypads can be provided for the dialling of telephone numbers. This arrangement allows tunnelling crew members to contact engineers and management directly because the CLEARCOMM system is now just an extension on the site PABX.

This intercom can be used in conjunction with the standard pullswitches or pullswitch stations using one cable.

Incorporated on the same pull wire cable as the voice communications is the proven and world wide accepted Austdac CLEARCOMMDATA conveyor monitoring and control system.

This system allows failsafe emergency stopping of the conveyor from the pullswitches along the conveyor (emergency stop system tested to EN4024.1 Cat. 3 and Australian Standard AS1755 for conveyor control).

The CLEARCOMMDATA system, as well as providing a failsafe emergency stop system, provides accurate indication of the switch location.

There are numerous features on the Austdac conveyor control system and some of these are:

- Failsafe emergency stop system;
- Accurate switch location;
- Facility to incorporate analogue values on the system. This can include such values as temperature, monitoring of bearings, motor currents, vibration monitoring, smoke and co detection.
- Sequencing of any number of down line conveyors or machinery;
- Interface to any PLC, giving powerful logic control of the conveyor or sequence of conveyors.

The unique design of the Austdac conveyor monitoring and control system, combined with powerful CLEARCOMM voice communication and pre-start warning system allows the utilisation of the complete conveyor control system on ONE CABLE.

The Austdac designed pull wire cable carries the electrical conductors to the voice communication, emergency stop system, and is the pull wire medium between lanyard switches.

Using this system allows the elimination of a “wire rope” pull wire and also removes the need to have ‘tensioned’ pull wire switches. This feature eliminates the possibility of spurious tripping of emergency stop switches due to over or under tensioned emergency stop switches.

Using the one cable for the pull wire medium, voice communication/pre-start warning, and a full emergency stop and monitoring system is an extremely cost effective way of facilitating all the features in tunnel construction.

Using one cable for all these features makes the extension of the conveyor and communication system more simple, cheaper, and means extra cabling that can be damaged is now required.

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## Tunnelling Equipment

### Main Control Equipment

The central equipment consists of a mounting pcb with plc interfacing capabilities, and a fully monitored pre-start alarm and speech facilities. The central system also includes an end of line monitoring unit which monitors the pre-start alarm and sends back a healthy signal to the main controller.



Termination Unit



Main Control Equipment

### Communications Stations

The CLEARCOMM Amplifier offers fully monitored, pre-start warning, evacuation tones, and full speech functionality along the length of the Conveyor. The unit also has internal batteries (charged down the line) to ensure full speech capabilities during power outage.



The main features are:

- Volume control.
- Call tone.
- Speech button.
- Low Battery Indicator.
- Tx/Rx to help in fault finding.
- Available in stainless steel or powder coated stainless steel.
- Optional strobe and handset versions available for ambient noisy areas.



These are usually spaced every 300 metres apart, along the conveyor.



## “CLEARCOMMDATA” Single Cable Industrial Intercom Pre-start Alarm and Signalling System

### *PullSwitch Stations*

The pullswitch is made from a high impact, polycarbonate material, with 25 years track record in underground coal mines.

It is fully sealed with an IP rating of IP56, with inbuilt reflective eyes when in a lockout position. All pullswitches are usually pre-mounted with a transmitter for indication and mounted onto a galvanised back plate.



The pullswitch stations are usually spaced every 150 - 175 metres apart and can be posted on both wallside, or non workside section of the conveyors. This unit uses a single core pullwire cable along the length of the conveyor. The pullswitch station can be used as an E-stops or combined with the communication station, which would alternate every other pullswitch station.

### *PullSwitch Stations with Visual indication:*

For fully monitored pre-start alarm pullswitch station with visual indication.



### *PullSwitch Stations with Audio indication:*

For fully monitored pre-start alarm pullswitch station with audio alarm output.



### *PullSwitch Stations with both Audio and Visual alarms:*

For fully monitored pre-start alarm pullswitch station with a combination of both audio and visual indication.



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## “CLEARCOMMDATA” Single Cable Industrial Intercom Pre-start Alarm and Signalling System

### Combined pullswitch and communication stations:

The stations have a combination of voice communications, monitored pre-start alarms, and lockout facilities. This allows full speech functionality along the length of the conveyor and has internal batteries to ensure full speech capabilities during a power outage. This station is usually located every 300 metres along the conveyor and alternated with a standard pullswitch.

This station can also incorporate an interrogate button to reinitiate the “Stop Messages” if the conveyor has stopped.



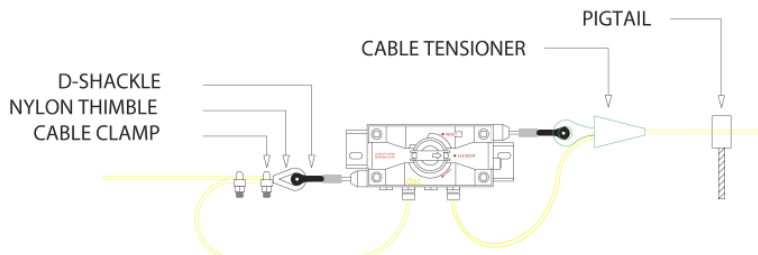
Materials Handling Equipment

### Emergency Stop Switches for Drive Heads and Remote Locations:



### PullSwitch Termination kit:

This kit comprises of a series of bulldog clamps, D-Shackles, Nylon Thimbles, and a self tensioning device to take up the slack and ease installation time.



Typical Cabling for Pullswitch

AUSTDAC PTY. LTD.

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